

WHAT IS CLAIMED IS:

1. Connector for interfacing a graphics system to a computing device motherboard comprising:

a plurality of connector pins adapted for routing signals from a motherboard to a field-changeable graphics card,

wherein a first connector pin of the plurality of connector pins is adapted to detect the presence of the field-changeable graphics card and to cause the signals to be routed accordingly.

2. The connector of claim 1, wherein the connector is a right-angle edge connector mounted to the motherboard.

3. The connector of claim 1, wherein the connector comprises 230 connector pins.

4. The connector of claim 1, wherein a voltage detected by the first connector pin indicates a mode of the interfaced graphics system.

5. The connector of claim 4, wherein a high voltage detected by the first connector pin indicates that a passive loop-through card is interfaced to the connector.

6. The connector of claim 5, wherein the connector is adapted to cause a low voltage differential signaling (LVDS) signal to be routed from a driver through the loop-through card to an LVDS display panel.

7. The connector of claim 5, wherein the connector is adapted to cause a digital video interface (DVI) signal to be routed from a driver through the loop-through card to a DVI display panel.
8. The connector of claim 7, wherein the loop-through card comprises a transmission minimized differential signaling (TMDS) transmitter for driving TMDS outputs on DVI signals.
9. The connector of claim 4, wherein a low voltage detected by the first connector pin indicates that an active graphics card is interfaced to the connector.
10. The connector of claim 10, wherein the connector is adapted to cause a peripheral component interface (PCI) express signal to be routed from a driver to the active graphics card.
11. The connector of claim 10, wherein the active graphics card is adapted to receive the PCI express signal from the driver in order to generate a plurality of output display signals.
12. The connector of claim 11, wherein the active graphics card is adapted to generate low voltage differential signaling (LVDS), digital video interface (DVI), television (TV) and video graphics array (VGA) signals.
13. The connector of claim 1, wherein the connector is configured to allow a user of a computing device to replace a graphics system post-assembly.

14. The connector of claim 1, wherein the connector is adapted to allow a manufacturer to configure a single motherboard for at least two different graphics modes.

15. The connector of claim 1, wherein the connector is further adapted to maintain a graphics card in a substantially parallel, spaced apart relation relative to the motherboard.

16. Apparatus comprising:

a motherboard usable in a laptop computing device;

a central processing unit mounted to the motherboard;

an integrated graphics processor (IGP) mounted to the motherboard;

a field-changeable graphics card interfaced to the motherboard; and

a plurality of stuffing resistors adapted for interfacing the field-changeable graphics card to a plurality of output display panels,

wherein the field-changeable graphics card resides in an independent, spaced-apart relation relative to the motherboard.

17. The apparatus of claim 16, wherein the apparatus further comprises an edge connector mounted to the motherboard and comprising a plurality of connector pins adapted for engaging the field-changeable graphics card in order to route signals from the motherboard to the field-changeable graphics card.

18. The apparatus of claim 17, wherein the field-changeable graphics card is a passive loop-through card.

19. The apparatus of claim 18, wherein a first set of stuffing resistors is adapted to interface the passive loop-through card to an output display panel for low voltage differential signaling (LVDS) signals.

20. The apparatus of claim 19, wherein a first connector pin on the edge connector is adapted to cause the LVDS signals to be routed from a driver, through the passive loop-through card and to an LVDS output display panel.

21. The apparatus of claim 19, wherein the first set of stuffing resistors is further adapted to interface the passive loop-through card to an output display panel for digital video interface (DVI) signals.

22. The apparatus of claim 21, wherein the passive loop-through card further comprises a transmission minimized differential signaling (TMDS) transmitter for driving TMDS outputs on DVI signal.

23. The apparatus of claim 19, wherein the first set of stuffing resistors is further adapted to interface the IGP to video graphics array (VGA) and television (TV) output display panels.

24. The apparatus of claim 17, wherein the field-changeable graphics card is an active graphics card comprising a graphics processing unit (GPU).

25. The apparatus of claim 24, wherein the edge connector is adapted to cause a peripheral component interface (PCI) express signal to be routed from a driver to the active graphics card.

26. The apparatus of claim 25, wherein the active graphics card is adapted to generate VGA, TV, LVDS and DVI signals.

27. The apparatus of claim 26, wherein a second set of stuffing resistors is adapted to interface the active graphics card to output display panels for VGA, TV, DVI and LVDS.

28. Apparatus comprising:

a motherboard usable in a laptop computing device;

a central processing unit mounted to the motherboard;

an integrated graphics processor (IGP) mounted to the motherboard;

a field-changeable graphics card interfaced to the motherboard; and

a plurality of muxes adapted for interfacing the field-changeable graphics card to a plurality of output display panels,

wherein the field-changeable graphics card resides in an independent, spaced-apart relation relative to the motherboard.

29. The apparatus of claim 28, wherein the apparatus further comprises an edge connector mounted to the motherboard and comprising a plurality of connector pins

adapted for engaging the field-changeable graphics card in order to route signals from the motherboard to the field-changeable graphics card.

30. The apparatus of claim 28, wherein the field-changeable graphics card is a passive loop-through card.

31. The apparatus of claim 30, wherein the plurality of muxes is adapted to interface the passive loop-through card to an output display panel for low voltage differential signaling (LVDS) signals.

32. The apparatus of claim 31, wherein a first connector pin on the edge connector is adapted to cause the LVDS signals to be routed from a driver, through the passive loop-through card and to an LVDS output display panel.

33. The apparatus of claim 31, wherein the plurality of muxes is further adapted to interface the passive loop-through card to an output display panel for digital video interface (DVI) signals.

34. The apparatus of claim 33, wherein the passive loop-through card further comprises a transmission minimized differential signaling (TMDS) transmitter for driving TMDS outputs on DVI signal.

35. The apparatus of claim 31, wherein the plurality of muxes is further adapted to interface the IGP to video graphics array (VGA) and television (TV) output display panels.

36. The apparatus of claim 29, wherein the field-changeable graphics card is an active graphics card comprising a graphics processing unit (GPU).

37. The apparatus of claim 36, wherein the plurality of muxes is adapted to automatically reconfigure to receive and transmit signals from the active graphics card.

38. The apparatus of claim 36, wherein the edge connector is adapted to cause a peripheral component interface (PCI) express signal to be routed from a driver to the active graphics card.

39. The apparatus of claim 38, wherein the active graphics card is adapted to generate VGA, TV, LVDS and DVI signals.

40. Connector for interfacing a field-changeable card to a computing device motherboard comprising:

a plurality of connector pins adapted for routing signals from a motherboard to a field-changeable card, the field-changeable card having circuitry for performing a rendering function for use in the computing device,

wherein a first connector pin of the plurality of connector pins is adapted to detect the presence of the field-changeable card and to cause the signals to be routed accordingly.

41. The connector of claim 40, wherein the field-changeable card is a graphics card comprising a graphics processing unit.

42. The connector of claim 40, wherein the field-changeable card is an audio chip.